

Vertex Predictions for MESSY Events

Bruce Baller

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Status

- Checked all events with no prediction
 - Made vertex predictions and sent to Nonaka
 - Rejected ~ 50 events in February
 - 867 neutrino events remain
 - Classified 183/867 events as MESSY = 21%
 - MESSY = no reliable SF lines pointing to a vertex, too many hits
- MESSY events are deferred to Phase 3

MESSY characteristics

- Visually scanned 200 MC events to select MESSY events
 - 20 events (Weighted fraction = 19%)
 - These events all have large SFT energy in the station downstream of the vertex
 - Defined new MESSY criteria: Number of MIP's in event station > 650 to get more events without visual scanning
- Identified MESSY events in 1k MC sample
 - Found 86/1k (14% weighted fraction)
 - 70% CCE, 15% CCmu, 5% CCtau, 10% NC
 - Fraction of all CCtau events in MESSY = 8%

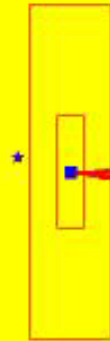
Vertex Prediction

- Attempted and failed to develop code to make vertex predictions for MESSY events
- Vertex prediction “by eye”
 - Make lines using shower core(s)
 - Assume the vertex is in the upstream part of the target
 - Spend ~10 seconds/SFT view to decide where to put the vertex
 - Display MC truth vertex position (next slides)
 - Write prediction – truth results to file
 - Histogram (NOT weighted...)

E872 Run= 3300 Event= 79 Wght= 185.3

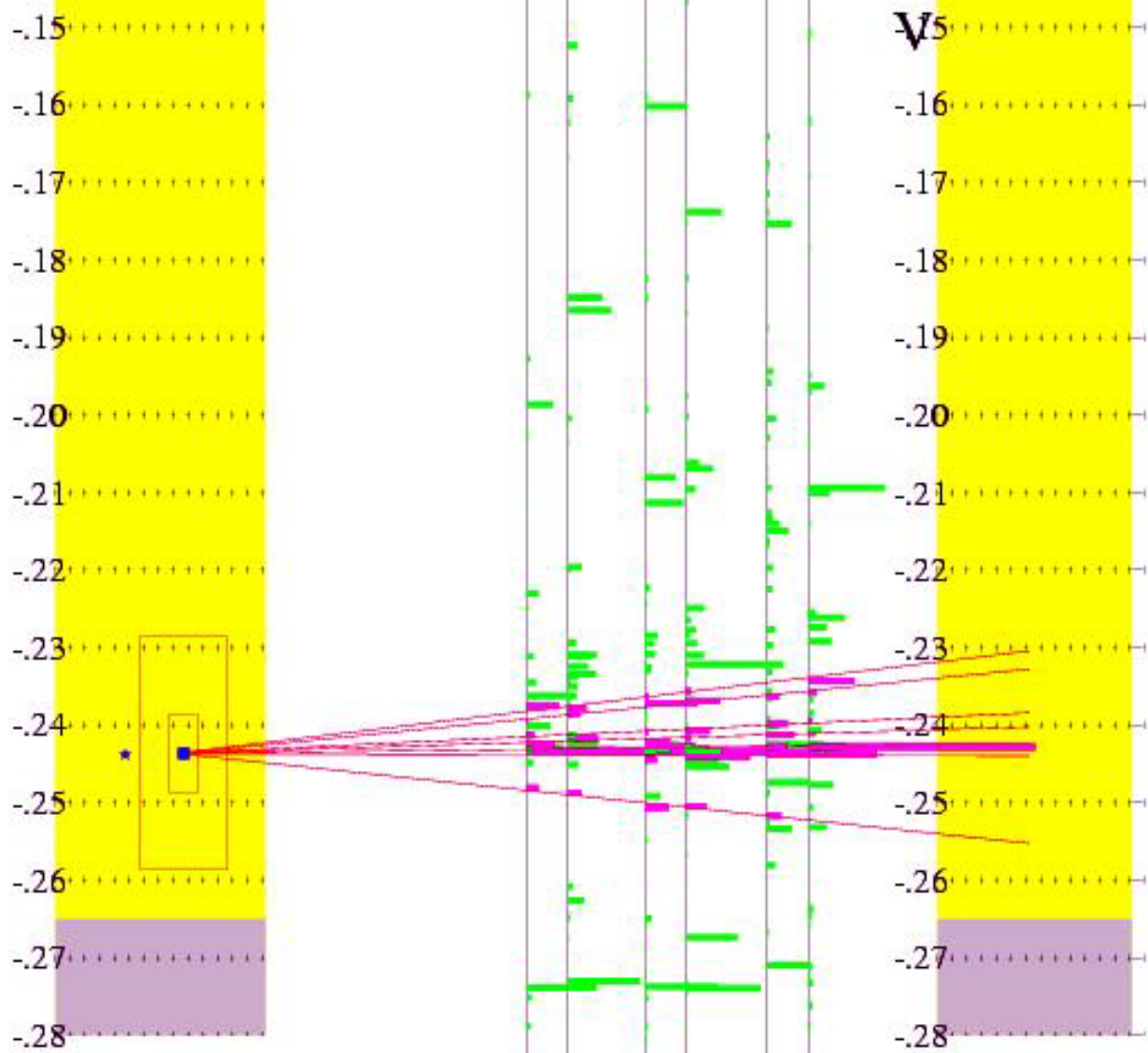
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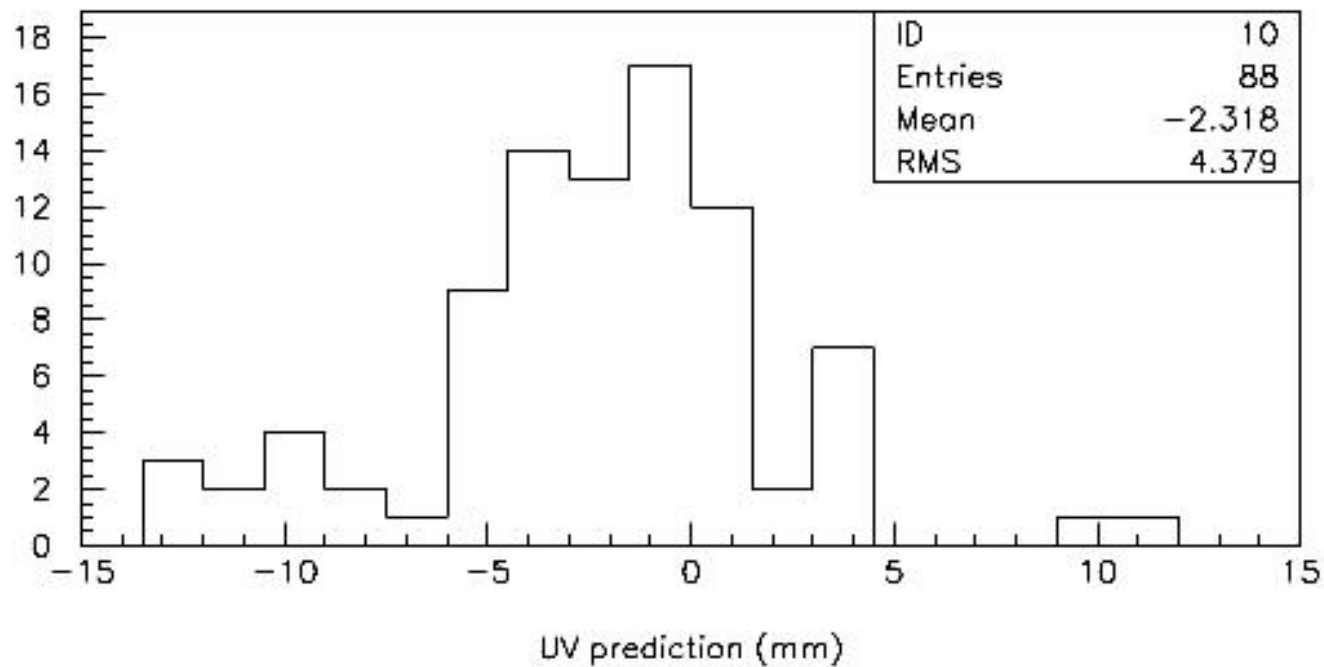
True vertex position



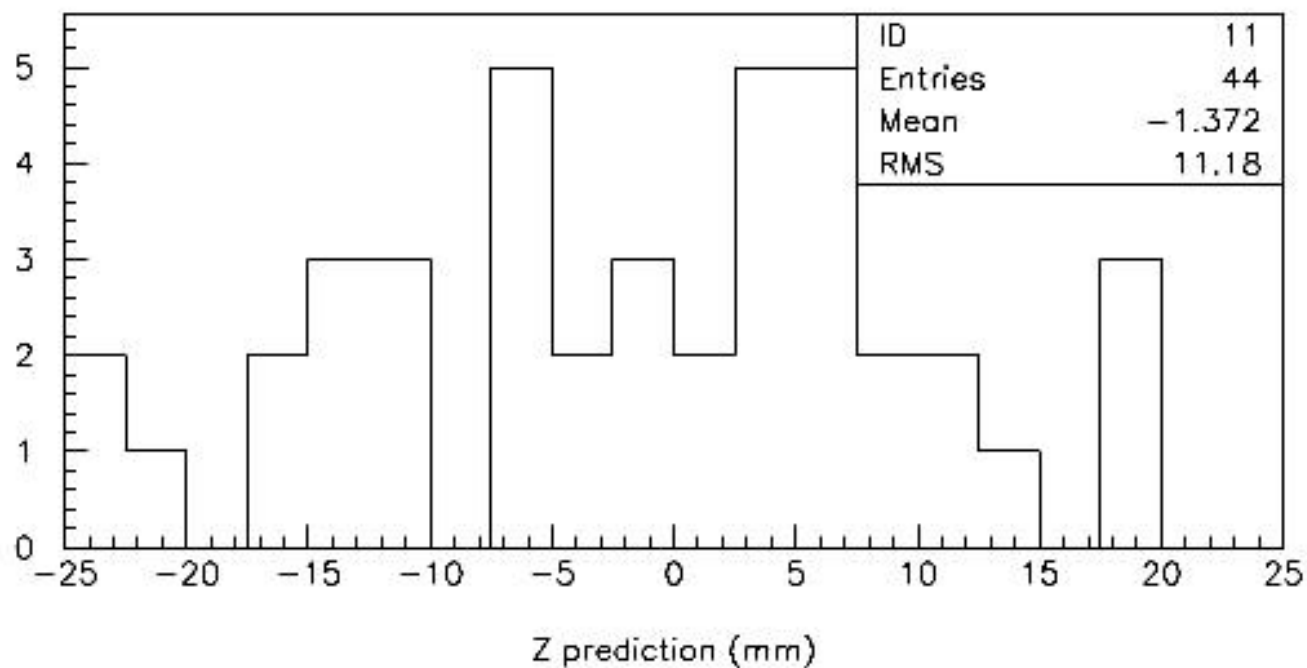
	Vtx:	Proc	U	V	Z	ntrk
*	9	105812	-246841	289580	0	
■	1	104527	-246641	309167	0	

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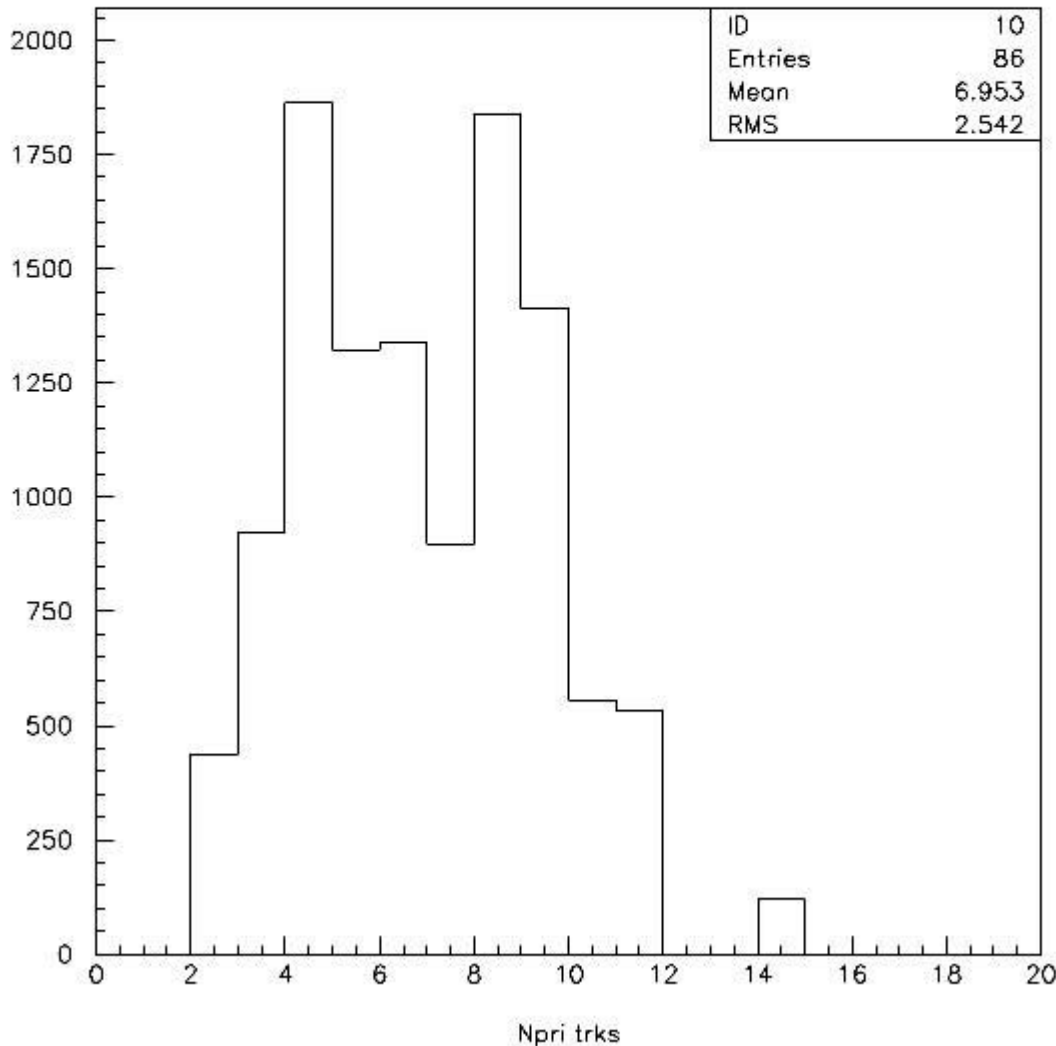


2/3 of events
within 1 cm²



90% of events
within 5 cm!

Can these events be located?



Prospects good
for location in
emulsion if
prediction is good
and tracks are not
badly broken